

Sinske HATTORI* & Masami MIZUTANI*: *Pachyglossa tristicha*
Herz. and its relationships

服部新佐*・水谷正美*: *Pachyglossa tristicha* Herz.

とその近縁関係

When Martin (1950, p. 492) enumerated *Pachyglossa*, an undescribed genus of Hepaticae from Stewart Island, New Zealand, he says, in the additional note (p. 500), as follows:

“On rocks on the lip of a waterfall in Pegasus Creek, I collected a hepatic which Mrs. Hodgson recognized to be new and forwarded to Prof. Herzog. He replied that it was a new genus and suggested the name *Pachyglossa tristicha*. If not a member of the Haplomitriaceae, it probably represents a new family. However, the perianths were immature and better material may be necessary to establish its relationships.”

Afterwards Herzog (1952, p. 256-257, fig. 1) mentioned in his paper *Pachyglossa tristicha*, but he did not give Latin diagnosis. In the same paper he (p. 259, fig. 3) described a second species of that genus, *P. dissitifolia*, from west Patagonia, from a sterile specimen, and this species is to be regarded as the type of the genus, from the view-point of the botanical nomenclature, since the first species is a nomen nudum. He discusses the systematic position of the present genus and states:

“Ich möchte eher glauben, dass *Pachyglossa* zu den Lophocoleen, die im subantarktischen Gebiet recht ähnlich Formen hervorbringen (z. B. *L. azopardana*, *L. Boveana* und *L. Spegazziniana*) näher Beziehungen hat und sich von dieser Gruppe lediglich durch die mehrschichtigen Blätter unterscheidet. Das Perianth, welches die Frage entscheiden könnte, ist leider noch unbekannt. Es ist zu hoffen, dass Herr Martin inzwischen diesen fehlenden Teil an neuem Material entdeckt hat und dann natürlich in ihrer Beschreibung verwendet haben wird.”

Hattori and Inoue (1958) and Hattori and Mizutani (1958) regarded this genus as a member of Calobryales. Recently we had an opportunity of studying a specimen of *Pachyglossa tristicha*, through the courtesy of Dr. W. Martin, and discovered in it perianths and rhizoids, which indicate that this genus belongs not to Calobryales but to Jungermanniales, because the total absence of perianths and rhizoids is the important characteristic of Calobryales to separate it from other foliose Hepaticae.

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Since no diagnosis has been published for *P. tristicha*, we wish to describe it below¹:

Pachyglossa tristicha Herzog in litt.; Martin, Trans. Roy. Soc. New Zealand **78**: 500 (1950), sine descr.; Herzog, Rev. Bryol. Lichenol. **21**: 256-257, Fig. 1 (1952), sine descr.

Dried material brown, rigid; stems about 3 cm long, about 1 mm wide including leaves, ascendent, simple, rigid, brown, 0.15-0.2 mm in diameter, giving rise from near base to stolon-like branches at axils of underleaves; new shoots normally arising from axils of underleaves, rarely becoming attenuate and stolon-like, as they descend and their leaves and underleaves become scale-like, depauperated and diminutive. Rhizoids seldom occurring restrictedly at base of scale-like or mostly vestigial underleaves of stolon-like branches, fasciculate, pallid and strong. In cross section of stem, cortical layer 2-3 cells thick, cortical cells smaller, 12-16 μ in diameter, cell-walls much thickened, brown, the inner cells 20-25 μ in diameter, thin-walled, pallid with small trigones. Leaves alternate, transversely inserted, very nearly in whorls of 3 rows together with underleaves, erect-patent at angles of 30-60 degrees to stem, ligulate-elliptical, somewhat asymmetrical, more or less cymbiform, 0.9-1.2 mm long, widest a little above middle, 0.35-0.4 mm, at base 0.25-0.3 mm wide, narrowed towards apex, apex obtuse, truncate or retuse. Cells of leaf-apex and along margin subquadrate, 8-12 μ , from middle to base subrectangular, 20-30 μ long, 8-20 μ wide, cell walls thick (to 4 μ thick), trigones entirely lacking, cuticle smooth. Cross section of leaf-middle sublinear, 2-3 cells thick throughout, both edges rounded or subtruncate, leaf base 4-(5) cells thick. Underleaves so similar to leaves that they are distinguished with difficulty, but nearly symmetrical, erect-

- 1) Dioica? (androecia haud visa); sicca brunnea, rigida; caulis ca. 3 cm longus, 0.15-0.2 mm in diametro, simplex, basi stolonifer, radicellis paucis; folia cum amphigastriis triseriata, alternata, transverse inserta, erecto-patula, 2-3 cellulas crassa, ligulato-elliptica, plus minus cymbiformia, 0.9-1.2 mm longa, supra medio 0.35-0.4 mm lata, basi 0.25-0.3 mm lata, apice anguste truncato, obtuso vel retuso; cellulae apicales et marginales subquadratae, 8-12 μ , mediae et basales subrectangulares, 20-30 $\times$ 8-20 μ , parietibus crassis, trigonis nullis; amphigastria foliis simillima. Gynaecia terminalia; perianthia juvenalia, immersa, trilobata, lobis subtriangulatis; folia floralia in 2-3 jugis, intima 1.2-1.4 mm longa, ovato-oblonga, medio 0.85 mm lata, basi 0.25 mm lata, marginibus supra medio valde recurvis, apice anguste retuso vel subtruncate; amphigastrium florale foliis floralibus simillimum. Caetera ignota.

patent at about 30 degrees to stem, 0.35–0.45mm wide a little above the middle apex narrowly obtuse or retuse. Female inflorescence terminal; young inflorescence (with mature archegonia about the time of fertilization) with bracts and bracteoles in 2–3 pairs which form an ovoid, compact “head,” closely imbricate and erect. Innermost bracts ovate-oblong, somewhat asymmetrical, 2–3 cells thick as leaves,

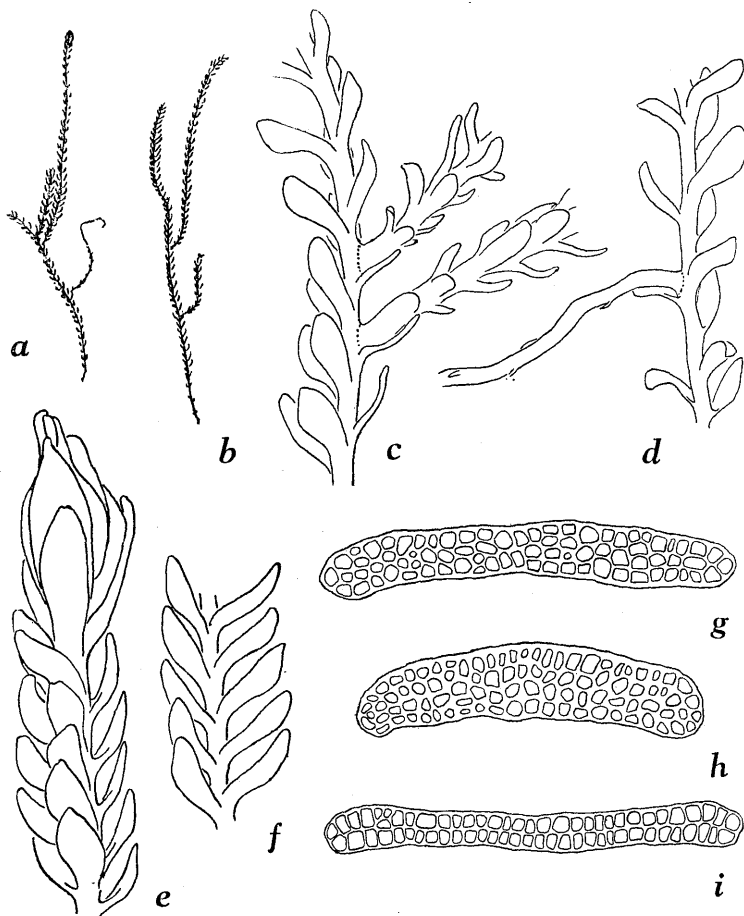


Fig. 1. *Pachyglossa tristicha*. *a, b*. Plants, $\times 13$. *c, d, f*. Parts of stem (*c*, with 2 leafy shoots, *d*, with 1 stoion-like shoot, both arising from axils of amphigastria), $\times 13$. *e*. Apical part of stem with gynaecium like “head” with compact bracts and bracteoles, $\times 13$. *g-i*. Cross-sections of leaf (*g, i*, through leaf-middle, *h*, through base), $\times 150$. Drawn by M. Mizutani from the type specimen.

1.2-1.4 mm long, 0.85 mm wide at middle, 0.25 mm wide at base, margins strongly recurved at distal half, apex narrowly retuse or subtruncate; outer bracts smaller

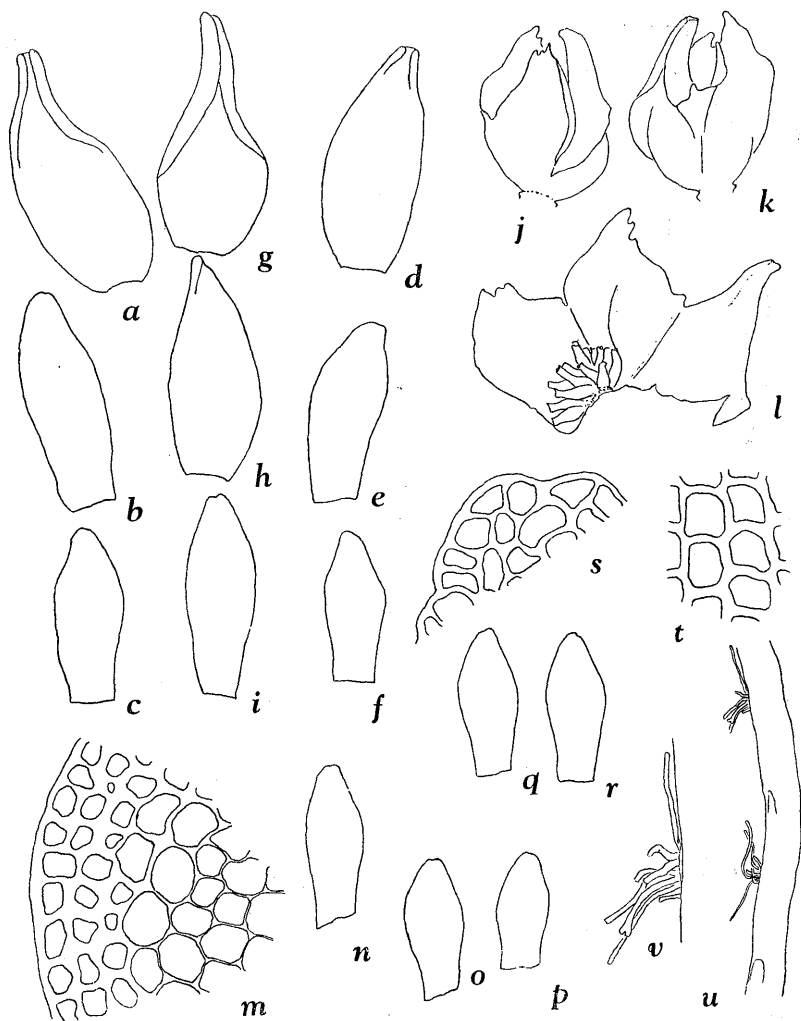


Fig. 2. *Pachyglyssa tristicha*. a-f. Bracts (a, d, innermost ones), $\times 18$. g-i. Bracteoles (g, innermost one), $\times 18$. j-l. Young perianths (l, opened to show archegonia), $\times 18$. m. Part of cauline cross-section, $\times 360$. n-p. Leaves, $\times 18$. q, r. Amphigastria, $\times 18$. s. Leaf apex, $\times 360$. t. Cells from leaf-middle, $\times 360$. u. Stolon with rhizoids, $\times 28$. v. Rhizoids, $\times 95$. Drawn by M. Mizutani from the type specimen.

and gradually approaching leaves in shape. Bracteoles nearly the same as bracts, but symmetrical, margins a little more strongly recurved at distal half. Perianth young and entirely hidden within bracts and bracteoles which form a "head," 0.9 mm long, one cell thick, trilobed to $1/4-1/3$ the length, lobes nearly triangular, about 0.7 mm wide at base, ventral lobe recurved along margins, retuse at apex, other 2 with irregularly undulate margins and 2-3-(4) apical teeth. Archegonia 10-15 per perianth, flask-shaped, about 0.2 mm long. Male inflorescences and sporophytes unknown.

Hab. On lip of waterfall at sea level on Pegasus Creek, Port Pegasus, Stewart Island, New Zealand, August 1, 1949, leg. W. Martin no. 530; herb. W. Martin, Th. Herzog and NICH; type!

As illustrated above, the gametophytic structure of *Pachyglossa* is very unique. The triseriate foliation reminds one of that of *Herberta* (Herbertaceae) and *Calobryum* (Calobryales). Leaves and underleaves are so similar in shape and structure that it is very difficult to distinguish them when dissected out. The most outstanding feature is that the 2~3-celled thickness of the leaves and underleaves, a character hardly seen in other foliose hepatics. It may also be worthy of attention from the phylogenetic point of view that the new shoots, both foliose and stolon-like, arise from the axil of underleaves, and that the rhizoids are very scarce and restricted on the stolon-like shoots at the base of the depauperated or vestigial underleaves.

As for the relationships of *Pachyglossa* it is so far certain that it belongs to Jungermanniales. As mentioned by Herzog (loc. cit.) it may be probable that this is a member of the Lophocoleaceae, since Stephani described many species from the Southern Hemisphere under *Lophocolea*, which, according to his unpublished Icones Hepaticarum, are similar to *Pachyglossa* in appearance. On this problem, we wish to discuss after we had an opportunity of examining similar *Lophocolea* species. *Pachyglossa* probably represents a new family which is much more primitive than Lophocoleaceae, but the disposition of it will need good fertile materials bearing sporophytes. Finally we wish to express our deep gratitude to Dr. W. Martin of New Zealand, whose courtesy made our study of *Pachyglossa tristicha* possible.

References

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